THE AMERICAN JOURNAL
...OF..
OPHTHALMOLOGY.

VOL. XVI. DECEMBER, 1899. NO. 12.

ORIGINAL ARTICLES.

REPORT OF ONE HUNDRED CONSECUTIVE CASES OF CATARACT EXTRACTION.

BY SAMUEL THEOBALD, M.D., BALTIMORE, MD.,

CLINICAL PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY, JOHNS HOPKINS UNIVERSITY—OPHTHALMIC AND AURAL SURGEON TO THE JOHNS HOPKINS HOSPITAL AND TO THE BALTIMORE EYE, EAR AND THROAT CHARITY HOSPITAL.

AS WILL be seen from an examination of the appended tables, the cases of cataract extraction here reported are in no sense selected ones. They include two eyes which had previously been iridectomized for glaucoma, two in which there was dislocation of the lens of traumatic origin, one in which there was myopia of very high grade with extensive detachment of the retina, three in which the lens opacity was secondary to syphilitic irido-choroiditis (posterior synchiæ being present in one of them), one in which the lens was shrunken and the iris adherent to its capsule, and one myopic eye in which there had occurred previously an attack of non-specific irido-choriditis. The only cases operated upon which I have not felt called upon to include in this report are: One case of traumatic cataract with rupture of the sclerotic, one of traumatic cataract with wound of the cornea and iris and probable lodgment of a foreign body in the eye, one of partial dislocation of the lens with iridodialysis the result of traumatism, and one of chalky cataract in an eye entirely blind from old glaucoma, in which the operation was done merely for cosmetic effect.

The Methods of Operation practiced in the one hundred cases were as follows:

Extraction with iridectomy (modified Graefe)	52
Extraction after preliminary iridectomy (usually accompanied by trituration of the lens)	26
Simple extraction	20
Extraction of dislocated lens in capsule	2
	100

In all of the cases, the simple extractions as well as those combined with iridectomy, the section was made throughout its whole extent in the sclero-corneal juncture, and the formation of a small conjunctival flap was the rule rather than the exception. The iridectomy, in the cases of combined extraction, was made by a simple cut with the scissors, the aim being to make a small coloboma. Preliminary iridectomy, which, as indicated, was usually accompanied by trituration of the lens through the cornea (Förster's method), was practiced, with a few exceptions, only in cases in which the cataract was immature.

Anæsthetic.—Cocain (4 per cent. solution, with 4 per cent. boracic acid) was used in 89 cases, chloroform in 6 case, no anæsthetic in 5 cases. More recently the cocain solution has been kept in a small Florence flask, and has been sterilized by a brief boiling before each operation, the eye-dropper being similarly sterilized.

Antisepsis.—Antiseptic precautions were employed in 81 cases, simple cleanliness in 19 cases. The antiseptic precautions consisted in washing the lids and brow and flushing the conjunctival sac with a 1 to 8000 sublimate solution, the flushing being repeated four or five times during the two or three hours preceding the operation, the lids meantime being kept closed with a pad of absorbent gauze wet with the same sublimate solution, and the sterilization of the instruments by a brief immersion in boiling water. In the earlier operations the hands of the operator (which need not come in contact with the eye) were simply cleansed with soap and water, but more recently I have thought it best to immerse the hands in a 1 to 1000 sublimate solution, drying them, however, with a sterile towel before beginning the operation, as I prefer not to operate with wet hands. A 1 to 8000 sublimate solution is

used for sponging the eye during the operation, very small absorbent gauze sponges, which have previously been sterilizd by boiling, being employed. In no instance, it may be remarked, have any ill effects seemed to result from the use of the bichloride solution in this strength.

Dressings and After-treatment.—In about four-fifths of the cases the lids (of both eyes) were closed by strips of isinglass plaster, no bandage being applied; but, not infrequently, especially in restless patients, a pad of absorbent cotton, kept in place by strips of rubber adhesive plaster, was used as a further protection to the eye operated upon.

My present practice is to close the lids with a comparatively narrow strip of isinglass plaster (which in some instances is omitted altogether) and over this to place a light pad of sterile gauze and absorbent cotton, which is kept in place by a Murdoch's protection shield. This shield, which is secured by strips of rubber adhesive plaster, is very light, being made of aluminium; is so constructed as to permit of free circulation of air and is, I think, the best of the contrivances of this kind —distinctly better and more comfortable to the patient than Ring's or Emerson's mask, for example.

In almost every case the operation was performed with the patient on the bed where it was intended he should remain, so as to avoid the possible risk of moving him afterwards, and here, as a rule, he was kept for the three following days. At the expiration of this time the dressings were changed, atropia instilled and, if all was well, the other eye was left uncovered and the patient was permitted to sit up. A daily application of atropia (4 grains of atropia and 10 grains of boracic acid to the ounce) was made after this, and on the seventh day the eye operated upon was left open. Up to this time, and for a few days subsequently, the patient was confined to a room which was moderately dark.

As a matter of routine, 20 grains of sulphonal or trional were given to the patient the evening of the operation, and the dose was repeated on the two or three succeeding evenings when its quieting effect seemed to be called for. Salicylate of sodium was found most useful in combatting undue inflammatory reaction occurring during the healing process.

Accidents and Complications —Loss of vitreous humor occurred in 6 cases (Nos. 11, 35, 62, 68, 74 and 85). In 5 of

these the loss was inconsiderable, and the success of the operation was in no wise impaired. In 1 (No. 68) the entire contents of the vitreous chamber, which were absolutely fluid (not at all different from the aqueous humor in consistence) flowed out, the eyeball collapsed and a suppurative panophthalmitis ensued. This eye, it should be remarked, had previously been iridectomized for glaucoma. Of the 5 cases of slighter loss, 3 were due to the patients contracting the lids strongly, 2 of these being in negroes, who are especially ungovernable in this respect.

In several cases *a bubble of air found its way into the anterior chamber* during the steps of the operation, an accident which I have seen happen only in cocainized eyes. In no instance, however, did this result in harm.

Iritis.—There were 7 cases of well-marked iritis, but in not a single instance was there occlusion of the pupil, and in no case was an after-iridectomy required. A slight degree of iritis, causing points of adhesion to form between the pupillary margin and the remains of the torn capsule, was common, but was not regarded as of moment.

Prolapse of Iris.—Among the 20 cases of simple extraction there were 3 in which prolapse of the iris occurred, 2 of these being sufficiently marked to require abscission. Among the combined extractions there was at least 1 case of marked incarceration of the iris, and there were, doubtless, a number of cases of slight adhesion of the iris to one or the other extremity of the corneal section, of which no special note was made.

Secondary Operations.—There were 23 cases in which discission of the capsule was performed and 3 of these required a repetition of this operation. For this purpose Knapp's needle-knife was commonly employed. Especial care was taken with the antiseptic precautions in these cases, and no untoward results occurred. In view of the occasional infection of the eye from this seemingly trivial operation, the importance of rigid asepsis in its performance can not be too strongly emphasized.

Results.—Considering as "successes" all cases in which V.=$^{20}/_{cc}$, or better, was obtained, and including under this head 7 cases in which, though the exact vision was not recorded, the notes showed that a good visual result had been secured (Nos. 49, 50, 57, 70, 71, 72 and 82), we have—

SUMMARY:

Successes (V.=$^{10}/_{cc}$ to $^{20}/_{xiii}$)	83
Successes (V. not recorded)	7
Total successes	90
Partial successes (V.=$^{16}/_{cc}$ to $^{11}/_{cc}$)	4
Partial successes (V. not recorded)	2
V. not improved (though recovery from operation was smooth)	2
Losses (from suppuration)	2
	100

Of the cases designated in the above summary as "partial successes," the poor vision was due in 1 (No. 23, V.=$^{11}/_{cc}$) to an antecedent choroido-retinitis; in 1 (No. 69, V.=$^{15}/_{cc}$) to a hæmorrhagic retinitis, recognized after a smooth recovery from the operation; in 1 (No. 97, V.=$^{11}/_{cc}$) to stupidity of the patient, in part, and in greater part, probably, to amblyopia, as the pupil was clear and the result of the operation, apparently, all that could be desired. In 1 (No. 24, V.=$^{16}/_{cc}$) the latest test of sight was made four weeks after the operation. A considerable improvement in vision was reported to have taken place subsequently, and had the case been seen later it is probable that it could have been included in the "successes." The 2 remaining cases, those in which there was no record of vision, were No. 19, in which a partially dislocated traumatic cataract was removed without accident, and No. 20, in which a hypermature (shrunken) cataract, secondary to iritis (posterior synechiæ being present), was extracted by means of forceps. In each of these a smooth recovery occurred, but for some reason, not apparent, the visual result was not recorded.

The 2 cases in which there was no improvent in vision, though recovery from the operation was smooth, were No. 66, in which the cataract was secondary to extensive detachment of the retina in a highly myopic eye, and No. 14, in which the lens opacity was consequent upon specific irido-choroiditis. A clear pupil was obtained in each case, but owing to the retinal detachment in the one and the old choroido-retinal changes in the other, no improvement in sight resulted.

Of the 2 eyes lost by purulent panophthalmitis, 1 (No. 68) has already been spoken of under the head of "loss of

vitreous humor." As has been stated, the eye had previously been iridectomized for glaucoma, and there was poor light perception in the nasal half the field. The capsule was found to be very tough, and an attempt to remove the lens (in its capsule) by engaging the cystotome in the capsule caused a rupture of the zonula and a partial dislocation of the lens. The vitreous humor, which had the consistence of water, flowed out, the eyeball collapsed, the lens fell back into the posterior chamber and was left there, after several unsuccessful attempts to remove it with a loop had been made. No surprise, of course, was felt when panopthalmitis supervened.

The other case (No 16) occurred in a negro man, 41 years of age, with a high grade of myopia. This was one of the 19 cases in which antisepsis was not practiced. The patient's other eye, beside the high grade of myopia, showed corneal nebulæ from former ulcerative keratitis, and subsequent to the loss of the eye he developed an attack of suppurative tonsillitis. The cataract was a soft one and its removal was accomplished easily, and the operation (a combined extraction) completed without accident. Undue pain was experienced during the succeeding 24 hours, and within 48 hours a suppurative panophthalmitis had developed. Enucleation was practiced subsequently.

The visual acuity obtained in the successful cases, omitting the 7 in which it was not recorded, and taking the best vision in each case whether before or after discission of capsular opacity, was as follows:

Vision = $^{20}/_{13}$	1 case.
Vision = $^{20}/_{20}$	2 cases.
Vision = $^{20}/_{30}$	16 cases.
Vision = $^{20}/_{40}$	7 cases.
Vision = $^{20}/_{50}$	11 cases.
Vision = $^{20}/_{60}$	9 cases.
Vision = $^{20}/_{70}$	11 cases.
Vision = $^{20}/_{75}$	4 cases.
Vision = $^{20}/_{80}$	3 cases.
Vision = $^{20}/_{100}$	8 cases.
Vision = $^{20}/_{120}$	4 cases.
Vision = $^{20}/_{200}$	7 cases.
Total	83 cases.

The visual tests were not all made at 20′, a number having been made at 15′ and 16′, as is indicated in the tables which follow; but, to make the above summary more intelligible, I have, in these cases, substituted fractions of the same value having 20 as the numerator. I may add, that the summary does not quite do justice to the visual results obtained, for there were a number of cases in which the vision was recorded as $^{20}/_{XXX}+$, $^{20}/_{XX}-$, $^{20}/_{XL}-$, etc., and these slight differences have been ignored, the cases being classed as having vision corresponding only to the type which they could read without error.

Included in the series there were, as has been stated, 20 cases of simple extraction. Among these there were no losses, and, as to visual results, all were successes except case No. 69, already spoken of, in which the rather poor sight obtained ($^{15}/_{CC}$) was due to retinitis hæmorrhagica. There were, however, 3 cases of prolapse of the iris, and while only 2 of these were sufficiently extensive to require abscission, they induced in me a lack of confidence in the method, the outcome of which has been an adherence, for some time past, to the modified Graefe extraction—a section throughout in the sclero-corneal juncture, a narrow conjunctival flap, and a small iridectomy made by a single snip with the scissors.

ONE HUNDRED CONSECUTIVE CASES OF CATARACT EXTRACTION.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
1	M. L., F., 68, Amer. (col'd) Good.	Hard, mature. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{30}$; declined 18 mos. later to $^{20}/_{200}$ from wrinkling of capsule.	Two discissions, the last one with two needles	$^{20}/_{30}$ (?).	. . . . .
2	M. C., F., Unrecorded.	Hard, hypermature. Myopic. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{200}$.	. . .	. . .	Ophthalmoscope showed evidences of old choroido-retinitis, explaining poor vision.
3	K. D., F., 43.	Hard, hypermature, semi-fluid cortex, tough capsule. Normal.	Extraction with iridectomy. A good deal of semi-fluid cortex left.	Normal.	$^{20}/_{30}$.	. . .	. . .	. . . . .
4	G. M., M., 55, Germ., Good.	Hard, mature. Normal. L.E.	Extraction with iridectomy.	Normal.	$^{30}/_{70}$.	. . .	. . .	See following case for operation on other eye.
5	G.M., M., 56, Germ., Good.	Hard, mature R.E.	Extraction with iridectomy.	Rather persistent iritis.	$^{20}/_{200}$.	Discission with needle-knife.	$^{20}/_{50}$.	. . . . .
6	Mrs. H., F., 55, German., Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal, though two days after operation patient struck eye with hand.	$^{20}/_{30}$.	. . .	. . .	. . . . .
7	J. H., M., 82, Irish, Good.	Hard, mature, amber-colored. Field contracted to nasal side.	Extraction with iridectomy. Cornea collapsed.	Normal.	$^{20}/_{60}$	. . .	. . .	Ophthalmoscopic evidences of old choroido-retinitis
8	A. C., F., 40, Mulatto.	Hard, mature, secondary to syphilitic irido-choroiditis.	Extraction with iridectomy. Capsule tough. Enlargement of corneal section necessary.	Normal.	$^{20}/_{200}$.	. . .	. . .	Marked pathological changes in choroid and retina, explaining low visual activity.

9	E. H., F., 54. German, Fair.	Hard, mature, ripened rapidly after Förster's operation. Normal.	Extraction after preliminary iridectomy.	Normal. Considerable cortex left.	$^{20}/_{50}$. Subsequent decline to $^{11}/_{200}$ from capsular opacity.	Discission.	$^{20}/_{100}$.	. . . . .
10	E. M. C., F., 72, American, Fair.	Hard, mature, as result of Förster's operation. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{30}$.	. . .	. . .	. . . . .
11	Mrs. L., F., 61, German, Fair.	Hard, mature, as result of Förster's operation. Normal.	Extraction after preliminary iridectomy. Considerable cortical matter left after delivery of nucleus and slight loss of vitreous, caused by efforts to remove this.	Iritis.	$^{20}/_{100}$.	Discission, followed by undue inflammatory reaction.	$^{20}/_{70}$ (?).	Eye bore operative interference badly.
12	J.H., M., 70, Negro.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{15}/_{40}$.	. . .	. . .	. . . . .
13	F., M., 85, Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{70}$.	. . .	. . .	Previous to extraction, divided canaliculus for relief of epiphora and consequent conjunctivitis.
14	G.S., M., 27, American. Fair.	Soft, mature, secondary to syphilitic iridochoroiditis. Pupillary adhesions to lens-capsule. Light perception poor. Field much contracted.	Extraction with iridectomy. Some blood and cortex left in pupillary area. Conjunctival flap.	Normal.	0	. . .	. . .	Eye recovered well from operation, but the imperfect light perception present before operation was lost. Syphilitic choroido-retinitis explained poor result.
15	E. A., F., 85, Negro, Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{15}/_{40}$.	. . .	. . .	. . . . .
16	C.C., M., 41, Negro, Fair.	Soft. Probably secondary to myopia of high grade. Normal.	Extraction with iridectomy. Whole of lens soft—no nucleus. Operation smooth in all respects. Small conjunctival flap.	Suppurative panophthalmitis supervened, and eye was subsequently enucleated.	0	. . .	. . .	A suppurative tonsillitis followed shortly after the panophthalmitis.

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Exam nation.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
17	L. McA., F., 84, American, Good.	Hard, mature, amber-colored. Fingers counted at 6′.	Extraction with iridectomy. Conjunctival flap.	Normal.	$^{20}/_{70}$.	. . .	. . .	. .
18	J. H. H., M., 69, American, Good.	Hard, mature. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{70}$ +.	. . .	. . .	. . . . .
19	C. A. J., M., 54, Negro. Good.	Traumatic. Lens partially dislocated (loose in hyaloid fossa). Normal.	Lens extracted in capsule without iridectomy and without use of traction instrument. A small head of vitreous prolapsed, but returned, leaving lips of wound in good apposition. Conjunctival flap.	Normal.	No record.	. . .	. . .	. . . . .
20	Mrs. R., F., 50, American, Fair.	Hard, hypermature (shrunken). Secondary to iritis. Posterior synechia.	Extraction after preliminary iridectomy. Lens removed with forceps.	Normal.	Case recorded as "doing well" on leaving hospital 18 days after operation, but no record of vision.	. . .	. . .	. . . . .
21	H.V.W., M., 62, American, Fair.	Hard, mature. Normal.	Extraction with iridectomy. Eye closed with plaster strip.	Normal.	$^{20}/_{75}$.	. . .	. . .	This was the first case in which I employed plaster strips to close the eyes, as a substitute for the bandage.

22	G. C., F., 29, American. Poor.	Soft. Secondary to severe and neglected syphilitic irido-choroiditis Posterior synechia. Good light perception.	Linear extraction after previous iridectomy. Capsule tough and thickened. Tried to extract it with forceps but failed, as it resisted a safe degree of traction.	Normal. Capsular opacity left.	$^{13}/_{200}$.	Discission.	$^{20}/_{200}$.	. . . . .
23	M. McP., F., 65, Irish, Fair.	Hard, mature. Secondary to irido-choroiditis and myopia.	Extraction after preliminary iridectomy.	Normal. Capsular opacity.	$^{12}/_{200}$.	Discission.	$^{11}/_{200}$, though patient says she can "thread a needle."	Pupil clear. Extensive pathological changes in choroid and retina (old) explain poor vision.
24	G. F., M., 75, American. Good.	Hard, mature, amber-colored. Normal, fingers at 8″.	Extraction with iridectomy. Nucleus exceptionally large and delivered with some little difficulty.	Normal, except that neither atropia nor duboisia could be used without causing conjunctivitis.	$^{16}/_{200}$. This was 4 weeks after the operation. Patient was not seen after this but reported considerable improvement in vision.	. . .	. . .	. . . . .
25	J. H., M., 81, American. Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{30}$.	. . .	. . .	. . . . .
26	B. D., M., 65, Negro. Good.	Hard, mature. Normal. R. E.	Extraction with iridectomy.	Normal.	$^{15}/_{20}$ —.	. . .	. . .	See following case for operation on other eye.
27	B. D., M., 65, Negro. Good.	Hard, mature. Normal. L. E.	Extraction with iridectomy.	Normal.	$^{15}/_{40}$.	. . .	. . .	. . . .
28	D. L. W., M., 54, American, Ch. diarrhœa.	Hard, mature, whitish in color, small nucleus. Normal. R. E.	Extraction with iridectomy.	Normal.	$^{20}/_{30}$ +.	. . .	. . .	See following case for operation on other eye.
29	D. L. W., M., 54, American.	Hard, mature. Normal. L. E.	Extraction with iridectomy.	Normal.	$^{20}/_{20}$ +.	. . .	. . .	. . . . .

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation. Method and Incidents.	Healing Proces·.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
30	M. J., F., 53, American.	Hard, mature. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{40}$ +.	. . .	. . .	. . . . .
31	M. A. M., F., 50, American, Fair.	Hard, mature, as result of Förster's operation. L. E.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{30}$.	. . .	. . .	Simple extraction subsequently performed on other eye. See Case 53.
32	S. C., F., 44, Negro.	Hard, mature (?). Normal.	Extraction after preliminary iridectomy.	Normal.	$^{20}/_{45}$ +.	. . .	. . .	. . . . .
33	M. McI., F., Age not recorded, Irish.	Semi-soft, mature. Normal.	Extraction with iridectomy.	No record.	$^{20}/_{50}$.	. . .	. . .	. . . . .
34	N. T., F., 65, Negro, Good.	Hard, nearly mature. Normal.	Extraction after preliminary iridectomy and trituration of cortex,	Normal.	$^{15}/_{70}$.	. . .	. . .	. . . . .
35	Mrs. H., F., 70, American, Fair.	Hard, nearly mature.	Extraction with iridectomy. Slight loss of semi-fluid vitreous. A good deal of cortex left.	Capsular opacity.	$^{15}/_{200}$.	Discission.	$^{20}/_{200}$.	. . . . .
36	H. P., F., 79, Negro, Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal, except that healing of corneal section was slow, suggesting incarceration of a bit of capsule.	$^{20}/_{100}$.	. . .	. . .	. . . . .
37	E. H., F., 60, Germ., Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{100}$ +.	. . .	. . .	Ophthalmoscope shows a large posterior staphyloma in this eye.

38	S. W., F., 76, German.	Hard, mature. Normal. L. E.	Extraction with iridectomy.	Capsular opacity.	. . .	Discission.	$^{16}/_{30}$ (?).	See following case for operation on other eye.
39	S. W., F., 76, German.	Hard, mature. Normal.	Extraction with iridectomy.	Iritis. Capsular opacity.	. . .	Discission, twice.	$^{16}/_{100}$.	. . . .
40	E. F. J., F., 73, American.	Hard, mature. Normal.	Extraction with iridectomy.	Capsular opacity with some unabsorbed cortical matter left.	$^{16}/_{75}$ —.	Discission advised, but not accepted.	. . .	. . . .
41	J. B., F., 50, Amer., Fair.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{60}$.	. . .	. . .	. . . .
42	N. H. C., F., Age not recorded, Amer.	Hard, nearly mature, as result of Förster's operation. Normal.	Extraction after preliminary iridectomy. Douched anterior chamber with warm, sterilized 2 per cent. boracic acid solution.	A good deal of cortical matter left.	$^{20}/_{20}$ +. Eighteen months later vision declined from wrinkling of capsule, to $^{20}/_{100}$.	Discission.	$^{20}/_{30}$ +.	Ophthalmoscope showed posterior staphyloma.
43	M. M., F., 69, Negro.	Hard, mature, amber-colored. Förster's operation.	Extraction after iridectomy.	No record.	$^{15}/_{60}$.	. . .	. . .	. . . .
44	J. H., M., 68, American.	Hard, mature.	Extraction with iridectomy. Point of knife wounded iris slightly in making section.	Iritis.	$^{15}/_{60}$ +.	. . .	. . .	Poor V. probably due to central retinitis, which was suggestive of albuminuria.
45	M.K., F., Age not recorded American.	Hard, mature.	Simple extraction (without iridectomy). Four-grain solution of eserine applied at beginning of operation and after its completion.	Normal. Central pupil.	$^{16}/_{30}$ +.	. . .	. . .	. . .

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
46	E M., M., 53, American.	Hard, fairly mature, as result of Förster's operation. Normal.	Extraction after preliminary iridectomy.	Normal.	$^{15}/_{20}$.	. . .	. . .	Cataract began as a post-polar opacity.
47	R. F., F., 70, Negro.	Hard, hypermature, fluid cortex, cholesterine crystals under anterior capsule. Normal. L. E.	Simple extraction.	Normal. Central, round pupil.	$^{15}/_{50}$ (?).	. . .	. . .	See following case for operation on other eye.
48	R. F., F., 70, Negro.	Hard, nearly mature. Normal. R. E.	Simple extraction.	Normal. Round pupil.	$^{20}/_{50}$ (?).	. . .	. . .	Some unabsorbed cortex present at time V. was tested. With the disappearance of this V. probably improved considerably.
49	A. P., F., 67, Irish.	Hard, mature. L. E.	Simple extraction.	Normal. Round, central and free pupil obtained.	Not recorded. Note simply states, "result excellent."	. . .	. . .	See following case for operation on other eye.
50	A. P., F., 67, Irish.	Hard, mature. R. E.	Simple extraction.	Normal. Piriform pupil.	Not recorded. Note merely states when and what glasses were prescribed.	. . .	. . .	. . . . .
51	S. B., F., 65, Negro.	Hard, mature.	Simple extraction. A sudden movement of patient during division of capsule entangled cystotome in iris.	Normal. Pupil nearly central; slightly drawn toward corneal section.	$^{16}/_{40}$ —.	. . .	. . .	. . . . .

52	A. T.. F., 60, Negro.	Hard, mature.	Simple extraction. Pupil not quite central. Some cortex left.	Iris found prolapsed on third day. Abscission of prolapse (which was not diminishing) on 35th day after extract'n.	$^{15}/_{70}$.	. . .	. . .	. . . . .
53	M. A. M., F., 53, Fair, Am.	Hard, mature. Normal. R. E.	Simple extraction.	Normal. Central pupil, without synechiæ.	$^{20}/_{50}$ (?). Capsular opacity.	Discission.	$^{20}/_{30}$.	L. E. had been previously operated upon for cataract. See Case 31.
54	C. H., F., 77, American.	Hard, hypermature.	Simple extraction.	No record.	$^{15}/_{45}$ (?).	. . .	. . .	. . . . .
55	E. G., F., 75, Negro.	Hard, mature.	Simple extraction.	No record.	$^{20}/_{100}$.	Discission.	$^{20}/_{70}$ +.	. . . . .
56	E. A , F., 60, Negro, Fair.	Hard, immature. Recent attack of acute glaucoma in this eye, for which I did an iridectomy.	Extraction after iridectomy for glaucoma. Much cortex left.	Normal. Cortex slow in absorbing.	. . .	Discission performed twice.	$^{20}/_{30}$ —.	For operation on other eye see Case 60.
57	V. W., F., 67, Amer., Fair.	Hard, mature. R. E.	Simple extraction.	Normal.	. . .	. . .	. . .	Case did well, but shortly after patient left hospital and before a record of V. was made she was accidentally struck in this eye by a horse shoe (with such force as to render her unconscious). General inflammation of the eye followed by phthisis bulbi ensued and enucleation was performed. See Case 98 for operation upon other eye.

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
58	W. F., M., 70, American.	Hard, mature, amber-colored. Counts fingers, can distinguish letters J. No. 20.	Simple extraction. Cornea collapsed after removal of lens, but soon resumed its normal state	Normal.	$^{20}/_{30}$ +.	. . .	. . .	. . . . .
59	E. O., F., 63, Negro.	Hard, mature.	Simple extraction. Ant. chamber douched with boracic acid solution.	Normal. Round, central pupil obtained.	$^{20}/_{100}$ +.	. . .	. . .	. . . . .
60	E. A., F., 60, Negro, Fair.	Hard, mature.	Simple extraction.	Prolapse of iris, followed by abscission some days later.	$^{14}/_{200}$. Capsular opacity.	Discission.	$^{20}/_{100}$ (?)	For operation on other eye see Case 56.
61	L. D. H., F., About 70, Amer., Fair.	Hard, mature, dark amber-colored ("black cataract"). Normal. Marked arcus senilis.	Simple extraction. A minute bubble of air left in anterior chamber.	Normal. Round, central pupil; iris drawn slightly forward opposite center of corneal section.	$^{20}/_{75}$.	. . .	. . .	. . . . .
62	E. G., F., 50, Negro.	Hard, mature, very white in color. Normal. History of blow on this eye 6 or 7 years since and of failure of sight soon afterward.	Extraction with iridectomy. Attempted to do a simple extraction, but owing to small size of pupil found it difficult to deliver lens, so made an iridectomy. Some vitreous lost, patient very unruly.	Normal.	$^{20}/_{60}$.	. . .	. . .	. . . . .
63	J.E.T., F., 66, Amer., Poor. Cancer of breast, of which she died some months later.	Hard, mature. Eye myopic. Normal.	Extraction after preliminary iridectomy. Poor anæsthesia from cocain. Patient behaved badly; section made with difficulty and had to be enlarged with scissors.	Some iritis.	$^{20}/_{60}$.	. . .	. . .	. . .

64	H. B, M., 61, Amer., Good, but too much alcohol.	Hard, not fully mature, though Förster's operation had been performed. Normal.	Extraction after preliminary iridectomy.	Normal; a good deal of cortical matter in pupillary area.	$^{8}/_{200}$. Capsular opacity.	Discission.	$^{20}/_{30}$.	. . . .	. . . .	
65	W. R., M., About 65, Amer., Very poor, (Alcoholism).	Hard, nearly mature, as result of Förster's operation. Normal. Canaliculus previously stitched for eversion and consequent epiphora and conjunctivitis.	Extraction after preliminary iridectomy. Cornea collapsed on escape of aqueous, as it also did when iridectomy was performed.	Normal.	$^{20}/_{50}$.	. . .	. . .	. . . .	. . . .	
66	J. S. S., M., 60, American, Poor.	Hard, fairly mature. Secondary to myopia of high grade and detachment of retina. Limited field for light.	Extraction after preliminary iridectomy. Nucleus very large and corneal section had to be enlarged. Low T. of eye made delivery of lens difficult.	Normal. Wound healed well, and a clear pupil was obtained.	Owing to extensive detachment of retina V. was no better than before removal of cataract. Light perception.	. . .	. . .	. . . .	. . . .	
67	T.H. M Irish, Good.	Hard, mature. Normal.	Simple extraction. Could not get pupil quite central	Prolapse of iris; slow recovery; cap. opacity	$^{11}/_{128}$.	Discission.	$^{20}/_{75}$ +.	. . . .	. . . .	
68	A. M., M., About 70, American.	Hard, mature. Secondary to glaucoma, for which an iridectomy was done. Poor light perception in nasal half of field.	Extraction after preliminary iridectomy. Capsule very tough. An attempt to remove lens by engaging cystotome in capsule partially dislocated it and ruptured hyaloid membrane. Vitreous humor, which was fluid, having the consistency of water, flowed out, the lens fell into bottom of vitreous chamber and could not be extracted.	Panophthalmitis. Subsequent enucleation.	0	. . .	. . .	. . . .	. . . .	

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
69	M. M., F., 72, Negro.	Hard, mat re, amber-colored.	Simple extraction.	Normal. Central, nearly round pupil.	$^{15}/_{200}$.	. . .	. . .	Poor V. due to hemorrhagic retinitis discovered after operation.
70	W. B., M., About 70, American.	Hard, hypermature. Normal.	Simple extraction.	Normal. An excellent result was obtained, but patient did not return to hospital for examination for glasses and no record was made of vision.	No record.	. . .	. . .	. . . . .
71	M. V., F., 84, Amer., Poor.	Hard, mature. Normal.	Extraction with iridectomy.	Capsular opacity which was needled by me and later in Richmond, Va.	. . .	Two discissions.	No record of V. after first needling; but excellent V. is said to have followed 2d discission; ability to read, sew, etc. This lasted for nearly two years, when hem'rhagic retinitis occurred, and V. became very poor.	. . .

72	M. T., F., 84, Amer., Poor.	Hard, mature. Pupil responded poorly to cocain and homatropia.	Extraction with iridectomy.	Normal.	Good result obtained, but patient failed to report for examination for glasses. No record of V. was made.	. . .	. . .	. . . . .
73	C. J., M., 67, American.	Hard, mature.	Extraction after preliminary iridectomy, and "trituration of cortex."	Rather persistent inflammation with tendency to + T. which yielded finally to mercury.	$^{12}/_{90}$ +.	. . .	. . .	. . . . .
74	C. M. M., M., About 70, Amer., Poor.	Hard, mature. Normal.	Extraction with iridectomy. Some vitreous lost after removal of speculum, from patient. contracting lids strongly.	Normal.	$^{20}/_{200}$.	Discission.	$^{20}/_{60}$ +.	. . . . .
75	J. S., M., 74, Amer., Fair.	Hard, fairly mature. Normal. Pupil responds poorly to atropia.	Extraction with iridectomy. Cornea small. Nucleus exceptionally large. Some difficulty in delivering lens, though sect'n included nearly half the circumference of cornea.	Normal.	$^{15}/_{45}$	. . .	. . .	. . . . .
76	M. S., F., About 70, Irish, Good.	Hard, fairly mature, amber-colored. Normal.	Extraction after preliminary iridectomy and "trituration of cortex."	Normal.	$^{20}/_{70}$ —.	Discission of a slowly developing capsular opacity.	$^{20}/_{30}$ —.	Three years later decline of V. from capsular opacity. Discission, giving V.= $^{20}/_{30}$ +. See Case 86 for operatien on other eye.
77	J. F. V., M., 65, German.	Hard, mature, secondary to myopia of high grade.	Extraction after a downward and inward (sic) iridectomy by another surgeon.	. . . . .	$^{20}/_{200}$.	. . .	. . .	After extraction marked choroido-retinal change (old) found with ophthalmoscope.

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract Functional Examination.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
78	A. P. W., F., About 78, Amer., Fair.	Hard, mature. Normal.	Extraction with iridec o my. A small bubble of air left in anterior chamber.	Normal, except the occurrence of entropion of upper lid, which was corrected by one application of collodion.	$^{20}/_{120}$ —. Some capsular opacity.	. . . .	. . .	. . . .
79	S. O. McC., M., 76., Am.	Hard, mature, dark amber-colored.	Extraction with iridectomy.	Normal.	$^{20}/_{60}$ +.	. . .	. . .	. . . .
80	J.A.J., M., 45, American.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{13}$.	. . .	. . .	For operation on other eye see Case 87.
81	G. W. M., M., 76, American, Fair, Recent fracture of leg	Hard, hypermature. Normal.	Extraction with i idectomy.	Normal.	$^{20}/_{40}$ +.	. . .	. .	. . . .
82	J. S., M., 75. Amer., Good.	Hard, mature, dark amber-colored. Normal, can couut fingers.	Extraction with iridectomy.	Normal. The record is: "Case did well, some capsular opacity."	Not recorded.	. . .	. . .	. . . .
83	F.G., F., About 65, Amer., Poor.	Hard, immature, small nucleus. Very slow in developing. Normal. Counts fingers.	Extraction seven months after preliminary iridectomy, with "trituration of cortex."	An unusual amount of cortex left. Recurrent attacks of "descemetitis" at intervals for six months.	$^{20}/_{100}$ (?).	Discission.	$^{20}/_{50}$ —.	. . . .
84	M. R., F., 56, Negro.	Hard, mature.	Extraction with iridectomy.	Normal.	$^{16}/_{30}$ —.	. . .	. . .	For operation on other eye see Case 88.

85	L. M., F., 70. Negro.	Hard, hypermature. Normal.	Extraction in capsule without iridectomy. When about to perform iridectomy patient contracted l ds strongly, forcing out lens in capsule with some loss of vitreous humor. Iris did not prolapse or appear in section, but pupil looked as though an iridectomy had been performed.	Normal. Eye still looks as though it had been iridectomized.	16/100.	. . .	. . .	For operation on other eye see Case 89.
86	M. S., F., About 70, Irish, Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	20/40 +.	Discission two years afterwards, vision having declined from capsular opacity.	20/40 +.	For operation on other eye see Case 76.
87	J.A.J., M., 45, American, Good.	Hard, not fully mature. Normal.	Extraction with iridectomy.	Normal.	20/20 (?).	. . .	. . .	For operation on other eye see Case 80.
88	M.R., M., 56, Negro.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	17/50 —. Still some cortical matter pres't.	. . .	. . .	For operation on other eye see Case 84.
89	L. M., F., 70, Negro.	Hard, hypermature. Normal.	Extraction with iridectomy.	Uneventful.	15/100 (?).	Discission three weeks after extract'n	Not recorded.	For operation on other eye see Case 85.
90	H.J.P., F., 64, Mulato, Good.	Hard, mature. Normal.	Extraction with iridectomy. Point of knife caught in iris, but was free and section completed satisfactorily. Some cortex left.	Normal, except a higher extensive incarceration of iris in each extremity of wound.	16/200.	Discission three months after extract'n	20/40.	A floating opacity noted in vitreous humor at the time record of V. was made.
91	S. S., F. 62, Negro.	Hard, mature. Normal.	Extraction with iridectomy.	Complicated by serous iritis, with tendency to high T.	20/70.	. . .	. . .	. . . . .

TABLES CONTINUED.

No.	Name, Sex, Age, Nationality, Gen'l Health.	Character of Cataract. Functional Examination.	Operation. Method and Incidents.	Healing Process.	Vision.	Secondary Operations.	Ultimate Vision.	Remarks.
92	M A. H., F., 65, American, Good.	Hard, mature. Normal.	Extraction with iridectomy.	An unusual amount of pain followed operation, attended by nausea and vomiting, which lasted for 24 hrs. Some iritis.	$^{20}/_{20}$ —.	. . .	. . .	Idiosyncrasy to atropia and, to a less degree, to the other mydriatics, which excited a follicular conjunctivitis accompanied by much irritation.
93	M. C. S., F., 70, American, Poor, Epithelioma upon cheek.	Hard, mature. Normal.	Extraction with iridectomy.	Uneventful.	$^{20}/_{100}$.	Discission four months after extraction.	$^{20}/_{40}$—.	. . . . .
94	J. P. C., M., 70, American, Fair.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{120}$.	. . .	. . .	V. was tested on 19th day after operation, and he was not seen after this date.
95	M. P., F., 57. Negro.	Hard, mature, as result of Förster's operation three months previously.	Extraction after preliminary iridectomy.	Uneventful. A small hæmorrhage observed in retina to nasal side of optic disc.	$^{20}/_{40}$ —.	. . .	. . .	Förster's operation was followed by very rapid ripening of cataract—a marked change in condition of lens occurring within one week. A firm posterior synechia also occurred at each pupillary angle of coloboma.

96	R. E., M., 66, Negro.	Hard, mature. Normal.	Extraction with iridectomy.	Uneventful	$^{20}/_{30}$ +.	. . .	. . .	. . . . .
97	Mrs. H., F, 77, American, Fair.	Hard, mature.	Extraction with iridectomy.	Normal.	$^{11}/_{200}$	. . .	. . .	Poor V. in this case due partly to stupidity of patient and in greater part, probably, to amblyopia, as pupil was clear and mechanical result of operation all that could be desired.
98	V. W., F., 70, American, Poor.	Hard, mature. Normal.	Extraction after preliminary iridectomy (Förster's operation).	Normal.	$^{20}/_{70}$.	. . .	. . .	After operation, appearance of fundus of eye suggestive of previous myopia. For operation on other eye see Case 57.
99	M. A. J., F., About 70, Amer., Good.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{50}$. (Slight capsular opacity).	. . .	. . .	. . . . .
100	F.D.S., F., 66, American.	Hard, mature. Normal.	Extraction with iridectomy.	Normal.	$^{20}/_{50}$. Subsequent decline of vision from capsular opacity.	Discission four months after extraction.	$^{20}/_{50}$ +.	. . . . .

A NEW STATIONARY OPHTHALMOSCOPE WITHOUT REFLEXES.

BY WALTER THORNER, M.D.

TRANSLATED BY CARL BARCK, M.D., ST. LOUIS, MO.

[CONCLUDED FROM PAGE 345, NOVEMBER NUMBER.]

DESCRIPTION OF THE INSTRUMENT.

HAVING thus considered the general laws which govern the observation of the ophthalmoscopic picture, I shall describe the apparatus constructed by me, a horizontal section of which is given in figure 8. O_2 represents the eye of the patient, O_1 that of the physician. The distance betwen the pupils of the two eyes is 22.5 cm., if both are emmetropic. $A\,B$ and $C\,D$ are two biconvex lenses of ordinary crown glass, whose focal distance is the same, 7.5 cm.; their diameter is 5 cm. $E\,F$ is a smaller plano-convex lens, also of 7.5 cm. focal length. The pupil of O_2 is situated approximately in the focus of $A\,B$. The distance between $A\,B$ and $C\,D$ is 7.5 cm., between $C\,D$ and $E\,F$ also 7.5 cm. All lenses are centered.

The unbroken lines represent the path of one pencil emitted from a point of the retina, the dotted lines the limits of all the pencils. In front of the pupil O_2 there is placed a prism of total reflection, P, in such a manner that it covers one half of the pupil, and that one of its equal sides remains 1 cm. distant from the cornea. By means of this prism the illumination from a small petroleum flame L is carried through the three lenses $A'\,B'$, $C'\,D'$ and $E'\,F'$, which correspond to $A\,B$, $C\,D$ and $E\,F$, in size, focal length and relative distance from each other. From the figure it is apparent, first, that all the pencils re-enter the pupil of the observer, so that the field of view is not diminished; second, that the rays emitted from a given point are reunited upon the the retina of the observer, so that a distinct image is produced. Directly in front of the lamp there is a diaphragm $G'\,H'$, with a semicircular aperture of 4 mm. radius. The straight line bounding the semicircle is placed vertical to and goes through the optic axis, whilst

the arc is directed toward G'; in consequence the image of this small semicircle is formed by the lenses A' B', C' D' and E' F', and after total reflection in the prism P, exactly upon that portion of the cornea which is shown in the figure to the left of M M. The portion of the cornea to the right of M M remains dark, but the retina to the right of M M is

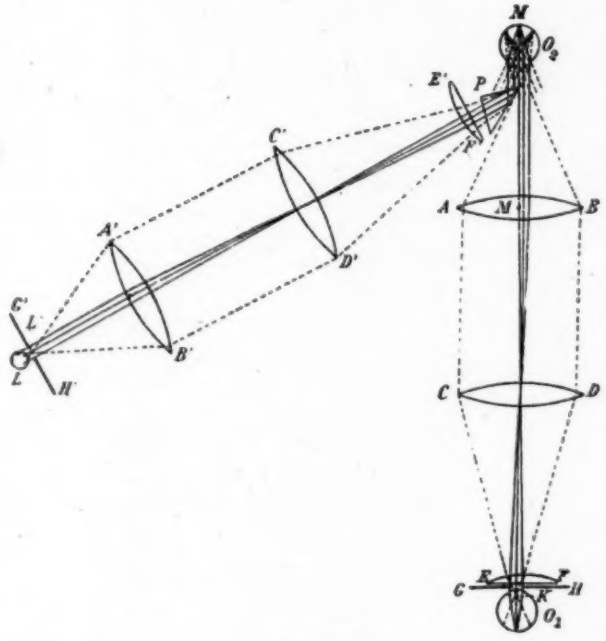

FIG. 8.

illuminated; therefore all rays which are reflected from the cornea meet to the right of the aperture in the diaphragm G H, and O' receives light from the patient's retina exclusively through the non-illuminated portion of the cornea to the right of M M; there are, in consequence, no reflexes.

The field of view and the magnification in this arrangement has been calculated above (p. 338 November number), resulting in a field of 37° in the magnitude of the upright image. The degree of brightness according to the principles analyzed (p. 343, *Ibid.*) remains to be calculated.

In the constructed apparatus only one half of the pencil emitted from a given point of the observed fundus reaches the

source of light. The illumination is, therefore, one half of the maximal $=^1/_2 \times 16\pi = 8\pi$. The pencil emitted from a given point of the fundus of the observer reaches in its entirety the pupil of the observed, because the aperture in the diaphragm, through which the observer looks, is pictured entirely upon the half of the pupil of the observed in natural size. The brightness is, therefore, always maximal up to the point where the pupil of the observer becomes as large as half the pupil of the observed. This may be assumed, because the intensity of the light returning from the fundus is feeble, so that the pupil is considerably dilated during observation. It is then $=8\pi$. As product we get $8\pi \times 8\pi = 64\pi^2$, which is the same brightness as in the inverted image. As a further advantage each part of the retina of the observed eye is but half as much blinded as in the usual observation in the inverted image.

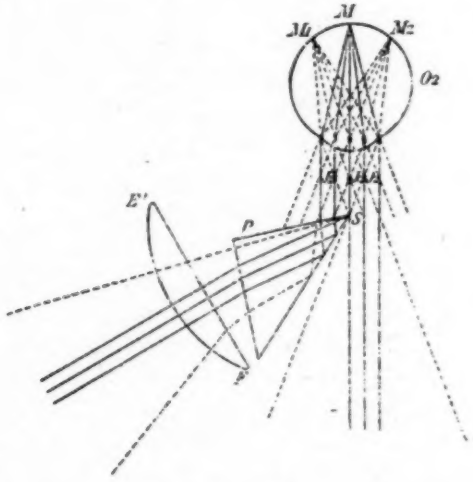

FIG. 8*a*.

In figure 8*a* the path of rays within the eye O_2 and in its neighborhood is represented on a larger scale. We see three pencils, each composed of parallel rays after their exit from the pupil of O_2. The middle one, drawn in unbroken lines, emanates from the point M of the retina, the one directed toward the right from M_1, the other from M_2. Only the left half or a portion of each of these parallel pencils serves for illumination of the respective point of the retina and only the right

half or a portion of it is used for observation. It is apparent that only such points can be simultaneously illuminated and observed, from which rays reach the point J_1, the image of L_1 (Fig. 8) and the point J_2, the image of K (Fig. 8). These points, J_1 and J_2, are situated upon the center of the lines which can be drawn from the edge of the prism to the left and right margins of the pupil of O_2. Their distance is equal to half the diameter of the pupil. M_1 and M_2 represent, therefore, the limits of the field of view. Its magnitude is

$$= \frac{J_1 J_2}{J_0 S} \text{ or } = \frac{\text{diameter of pupil}}{\text{distance of iris from edge of prism.}}$$

Supposing that the distance of the iris from the edge of the prism to be 10 mm., the pupil of O_2 must have a diameter of 6, 7 mm., in order that the field of view amounts to $^2/_3$ in the horrizontal direction (as calculated above). If the pupil is smaller, the field of view of the apparatus in the horizontal direction is not utilized entirely, but it remains unchanged in the vertical direction. Furthermore, it is evident from figure 8*a*, that the brightness of single points of the retina decreases gradually towards the right and left, whilst it remains the same for all points upon the vertical line. But this decrease in brightness is practically of small importance.

As regards the external appearance of the apparatus a full view is given in figure 10, as seen from the position of the observer. It consists of two tubes, which form an acute angle with each other. At the apex of this angle the prism is situated and there also is the aperture into which the patient looks. The tube which serves for observation can be extended for the adjustment to the different states of refraction. For the high degrees of hyperopia and myopia two extra oculars are provided, which can be readily exchanged. For ilumination, there is at the end of the tube a petroleum lamp, and closely in front of this is the diaphragm with an aperture of the form and size of half the cornea (Fig. 9).

The apparatus, as a whole, is firmly connected with the lamp and is movable with it upward and downward by one screw, and to the right and and left by another screw. These movements are necessary in order to follow easily the motions of the patient's eye. The patient places his chin upon a rest provided in front of the apparatus. Another contrivance is

necessary in order to find the correct position of the apparatus in reference to the eye. For this purpose I have added a box, in which two prisms are placed, on the right side of the tube for observation. The one serves for adjustment by the observer himself, whilst he examines the patient, by the other the apparatus may be adjusted for the inexperienced observer by a person standing on the right side of it.

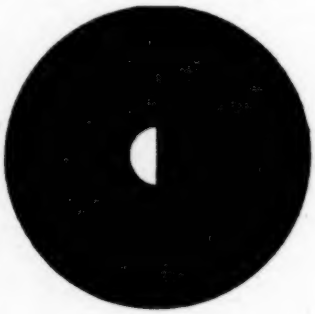

FIG. 9.

It is very easy to survey a large field of view, if the pupil is dilated. One can see at the same time the macula and the optic disc if the direction of the observer is such that these points are seen at the opposite sides of the field of view. The magnification is the same as in the upright image and there appear no reflexes at any direction of the visual axis.

The apparatus can be used for demonstration of the ophthalmoscopic picture to an inexperienced observer as well as for minute examinations. Although the magnification is not larger than that in the upright image, it is possible to recognize finer details, because the observation is considerably easier and because single spots can be examined much longer. One can see, for instance, around the larger blood-vessels fine longitudinal striæ, which I take to be the distribution of the non-medullated nerve fibers.

An artificial dilatation of the pupil is necessary in the large majority of patients, because it contracts considerably on account of the magnitude of the illuminated field. It is best to use for dilatation homatropine without the addition of cocaine, because the latter sometimes produces changes in the cornea, which interfere with the distinctness of the im-

age. For the examination of the eyes of animals, which from their construction are less convenient for examination than the human eye, for instance, rabbits, it is better to adjust the apparatus so that only $^1/_3$ of the pupil is used for illumination and $^2/_3$ for observation, in order to look through the central portion

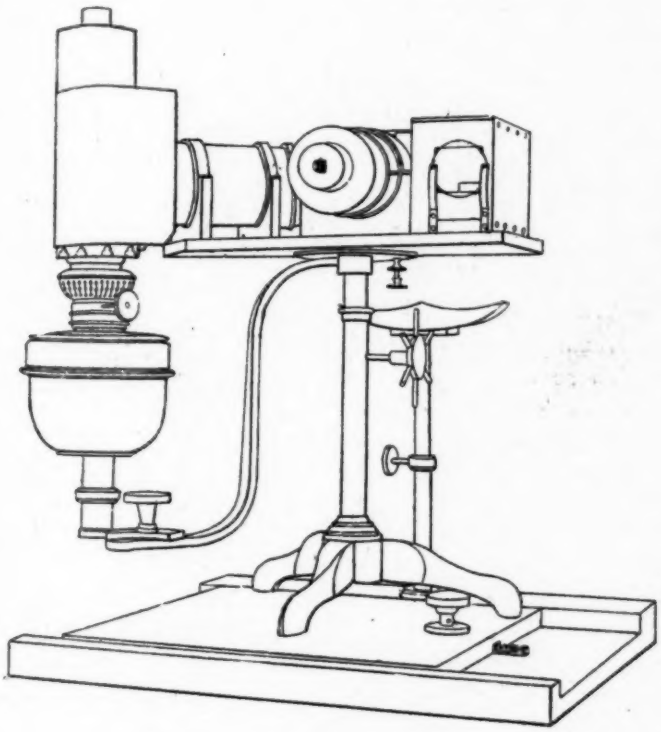

FIG. 10.

of the eye, which gives the best pictures. In the same manner as with other ophthalmoscopes the different methods which are used for the determination of refraction may be combined with this apparatus. The photography of the fundus may thus also be greatly facilitated.

The instrument is furnished by the firm of F. Schmidt & Haensch, 4 Stallschreiberstrasse, Berlin, S.

CORRESPONDENCE.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS. PARIS, AUGUST, 2-9, 1900.

Editor AMERICAN JOURNAL OF OPHTHALMOLGY:

I herewith inclose you a circular containing the rules and regulations of the XIIIth International Congress of Medicine, to be held in Paris, August 2-9, 1900.

You will note that all doctors of medicine may become members of this Congress by making the proper application and paying $5. The Secretary-General in Paris has instructed the American National Committee to receive the applications of American physicians and to return a receipt for the amount sent. These applicatians and the money are then to be forwarded to Paris, and in due time cards of admission to the Congress will be distributed to all subscribers.

Members desiring to present papers will forward the title and a résumé before May 1, 1900, to the Secretary of the Section to which they belong, for each Sectional Committee reserves to itself the right of drawing up its own working programme.

The Committee trusts you will give the French circular and the means of procedure by which physicians become members of the Congress due notice in your journal, as it is extremely desirable that the American profession have a full representation in the International meeting of 1900.

AMERICAN NATIONAL COMMITTEE.

Drs. Wm. Osler, Chairman; G. M. Sternberg, W. K Van Reypen, Walter Wyman, W. W. Keen, H, P. Bowditch, O. F. Wadsworth, H. G. Miller, E. D. Fisher, G. J. Engelmann, H. W. Stelwagon, Samuel Johnston, Robert F. Weir, A. Jacobi, E. G. Janeway, James Bell, H. M. Sherman, R. H. Chittenden, Burt G. Wilder, Henry Koplik, and B. Holly Smith. H. Barton Jacobs, Secretary.

BALTIMORE, MD., November 1, 1899.

DEAR DOCTOR.—The American National Committee of the XIIIth Internationa Medical Congress, to be held in Paris, from the 2d to the 9th of August, 1900, in connection with the French Exposition, has been organized as above indicated.

All doctors of medicine are entitled to membership in this Congress by making the proper application and paying the sum of $5. The Secretary-General in Paris has instructed the American National Committee to receive the applications of American physicians, and for this purpose a blank form is inclosed, upon which is to be written the full name and address, degrees and any position of note held, together with the Section of the Congress to which the writer wishes to belong; a visiting card should be appended. These forms, with the $5, are to be returned to the Secretary of the National Committee; he in turn will send receipt and forward the slips and money to Paris, where they will be registered, and in due course of time a card of admission to the Congress mailed to each applicant.

The Committee hopes the American representation in this extremely important Medical Congress may be as large as possible, and they would urge every member of the profession to enter his name for membership, this alone entitling him to receive a digest of the full procedings of the Congress and the printed report of the Section to which he belongs.

[Communications respecting the delivery of these reports to members to be addressed to M. Masson, publisher of the proceedings of the Congress, 120 Boulevard St. Germain, Paris.]

H. BARTON JACOBS,

3 W. Franklin St., Baltimore, Md. *Secretary.*

SECTION OF OPHTHALMOLOGY.

M. Panas, President; MM. Javal, and Gayet, Lyons, Vice-Presidents; M. Parent, 26 Avenue de l'Opéra, Paris, Secretary-General; MM. Chevalereau and Rochon Duvigneaud, Assistant Secretaries.

Members.—MM. Abadie, Badal, Hocquard, Jocqs and Lagrange, Bordeaux; Bruch, Algiers; Chauvel and Chibret, Clermont-Ferrand; Dor, Lyons, Landolt and de Lapersonne,

Lille; Meyer and Rohmer, Nancy; Terson, Trousseau and Truc, Montpellier.

Papers.—1. "Optic Neuritides of an Infectious and of a Toxic Origin," by Bellarminoff, St. Petersburg; Nuel, Liège; and Uhthoff, Breslau.

2. "Cortical Center of Vision," by Bernheimer, Vienna; Angelucci, Palermo; and Henschen, Upsala.

3. "Comparative Value of Enucleation and of the Operation Suggested to Replace It," by Pflüger, Berne; Snellen, Utrecht; R. H. Swanzy, Dublin; and de Schweinitz, Philadelphia.

NEWS ITEM.

In the fourth volume of "Sajou's Annual and Analytical Cyclopedia of Practical Medicine," the article on Diseases of the Lens, is, by mistake, credited to Dr. Edward Jackson. It was written by Dr. F. W. Marlow, of Syracuse, who deserves the credit for an excellent presentation of the subject.

VOL. XVI, NO. 12. DECEMBER, 1899. WHOLE NO. 192.

THE AMERICAN JOURNAL

OF

OPHTHALMOLOGY

EDITED AND PUBLISHED BY

ADOLF ALT, M.D.,

Assistant Editor,

J. ELLIS JENNINGS, M.D.

CONTENTS.

SUBSCRIPTION, $3.50 A YEAR IN ADVANCE.

PUBLISHED MONTHLY. 3036 LOCUST STREET, ST. LOUIS, MO.

Entered at the Post Office at St. Louis, Mo., as Second-Class Matter

COLLABORATORS:

AYRES, Dr. S. C., Cincinnati, Ohio.
ALLPORT, Dr. F., Chicago, Ill.
BEARD, Dr. C. H., Chicago, Ill.
BURNETT, Dr. Swan M., Washington, D. C
FRYER, Dr. B. E., Kansas City, Mo.
BRUNS, Dr. H. Dickson, New Orleans, La
GREEN, Dr. John, St. Louis, Mo.
HANSELL, Dr. H. F., Philadelphia, Pa.
HOTZ, Dr. F. C. Chicago, Ill.
HOWE, Dr. L., Buffalo, N. Y.
KIPP, Dr. D., Newark, N. J.
MILLIKIN, Dr. B. L., Cleveland, Ohio.
POOLEY, Dr. T., New York.
PROUT, Dr. J. S., Brooklyn, N. Y.
RISLEY, Dr. S. D., Philadelphia, Pa.
RYERSON, Dr. G. S., Toronto, Canada.
THEOBALD, Dr. S., Baltimore, Md.
STRAWBRIDGE, Dr. G., Philadelphia, Pa.
THOMSON, Dr. W., Philadelphia, Pa.
THORINGTON, Dr. J., Philadelphia, Pa.
WEBSTER, Dr. D., New York, N. Y.
WADSWORTH, Dr. O. F., Boston, Mass.

TO CONTRIBUTORS.

Contributions of Original Articles on Ophthalmological Topics are desired by the AMERICAN JOURNAL OF OPHTHALMOLOGY on the following conditions:

1. Original Contributions are received only on the express understanding that they are given to the JOURNAL exclusively.

2. Authors of Original Articles will receive free, 100 reprints (without covers), if a desire for same is expressly written on the manuscript. Any additional number will be furnished at cost.

3. THE AMERICAN JOURNAL OF OPHTHALMOLOGY is published on the 15th of each month so that articles intended for the current issue should reach the Editor not later than the first day of the month.

Address all Communications to

ADOLF ALT, M.D.,
3036 Locust St., St. Louis, Mo.

ARGENTAMINE

A More Efficient and Non-Irritating Substitute for Silver Nitrate.

Argentamine is a solution containing 10% each of Nitrate of Silver and Ethylenediamine.

Dr. C. Pezzoli, as the result of a series of experiments to determine the relative penetrating powers of the various silver preparations, found that Argentamine proved the most effective and protargol the least so, argentic nitrate and largin having an intermediate strength.

Argentamine is non-caustic in medicinal solutions. Instilled into the conjunctival sac it causes neither burning nor pain, nor does it ever occasion the intensely irritant effects, epiphora, blepharospasm, and chemosis, so often seen with the nitrate. Argentamine has a far stronger antiparasitic action. It is not precipitated by the normal saline and albuminous fluids of the urethra and conjunctiva; the ethylenediamine in it readily dissolving both albumin and silver chloride. Hence it penetrates into the deeper epithelial layers, and destroys the micro-organisms present there, whilst silver nitrate is precipitated in an insoluble and inefficacious form. Argentamine can be used in all cases suited to the exhibition of silver nitrate.

Argentamine has been employed for several years in **Prof Hoor's Eye Clinic** in Klausenburg, in a large number of affections of the conjunctiva, with highly gratifying results. The conjunctiva treated with Argentamine becomes paler, the swelling diminishes, and secretion decreases. Burning and pain are absent and the patient can open his eyes without trouble.

Dr. Josef Imre, of Budapest, has used Argentamine extensively in conjunctivitis, catarrhal and gonorrheal ophthalmia, purulent keratitis, trachoma, etc., and recommends it strongly to ophthalmologists. Argentamine is employed in 5 per cent watery solutions, being pencilled or instilled into the eye once or twice daily, without after-irrigation.

EUPHTHALMINE.

A Powerful Mydriatic, Possessing Several Important Advantages over the Agents heretofore employed for the Production of Temporary Mydriasis.

Euphthalmine Hydrochlorate is a white, crystalline powder readily soluble in cold water. It is an active mydriatic, which does not damage the corneal epithelium. The mydriasis and the slight accomodation paralysis, when present, disappear much more quickly than with homatropine, cocaine, etc., and there never occur any unpleasant effects upon the organism. Thorough investigation at the **Eye Clinics of the Universities of Goettingen, Marburg and Giessen,** demonstrate this conclusively. **Dr. Winselmann,** of Berlin, considers it a valuable mydriatic for diagnostic purposes, causing neither conjunctival nor corneal irritation; and there is no pain nor rise in ocular tension. It has been employed for ophthalmoscopic examinations of the eye, and for the correction of errors of refraction by retinoscopy with great satisfaction. It is to be employed as a 5 to 10 per cent solution.

Euphthalmine is supplied in ½ and 1 gramme vials at $1.75 per gramme.

TRIKRESOL.

A Pre-Eminent Antiseptic and Disinfectant.

It is a clear, white liquid, having three times the disinfectant value of carbolic acid as determined by **Profs. Fraenkel** and **Gruber;** whilst it is three times less poisonous and less caustic. **Prof. E. A DeSchweinitz,** of Washington, D. C., recommends it very highly as an antiseptic for collyria, 1 to 1000 parts of water, preventing all bacterial growth, no matter how long the solutions are kept, and being absolutely non-irritating to the conjunctiva.

SCHERING & GLATZ, 58 Maiden Lane, New York,

Literature furnished on application. *Sole Agents for the United States.*